

3. (Amended) A Ca-containing rust-resistant steel according to Claim 1, wherein said equilibrium ~~S~~ sulfur soluble amount (%S inc.) value is determined in accordance with the following equation (1), including as its parameters the ~~inclusions~~ optical basicity calculated from the composition of said oxide inclusions, the casting temperature and the components forming the steel, such equation being

$$\log (\%S \text{ inc.}) = (21920 - 54640\Lambda)/T + 43.6\Lambda - 23.9 - \log [aO] + \log [\text{wt}\%S], \quad \dots(1)$$

wherein

T represents the casting temperature (K) during the continuous casting process,

[wt%S] represents the concentration of S contained in said steel,

[aO] represents the oxygen activity of said molten steel at said casting temperature (T) during a continuous casting process, and

wherein during Al-deoxidation,

$$\log aO = (-64000/T + 20.57 - 2\log[\text{wt}\%Al] - 0.086 [\text{wt}\% Al] - 0.102 [\text{wt}\% Si]) / 3,$$

and wherein during Ti-deoxidation,

$$\log aO = (-60709/T + 20.97 - 2\log[\text{wt}\%Ti] - 0.084 [\text{wt}\%Ti]) / 3,$$

and provided that, when Al and Ti are present in said steel a reduced aO oxygen activity is provided according to the following equation (2):

$$\Lambda = 1.0 X (\text{CaO}) + 0.605 X (\text{Al}_2\text{O}_3) + 0.601 X (\text{TiO}_2) + 0.78 X (\text{MgO}) + 0.48 X (\text{SiO}_2) + 0.55 X (\text{Cr}_2\text{O}_3) + 0.59 X (\text{MnO}) \quad \dots(2)$$

wherein

$\Lambda$  represents the optical basicity of oxide inclusions, and

X (MmOn) represents the cation equivalent of the oxide present, according to the following equation (3):

$$X (\text{MmOn}) = n \times N (\text{MmOn}) / \sum (n \times N (\text{MmOn})), \quad \dots(3)$$

wherein

$N$  ( $MmOn$ ) represents the mol fraction of oxide present and  
 $n$  represents the valence of oxygen contained in said oxide.

